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ABSTRACT

This document presents the results of two studies investigating (1) the personality traits of physically trained and physically untrained individuals, and (2) the changes effected in personality traits by an exercise program. Training programs consisted of ten-week periods of activity in fencing, body conditioning, and weightlifting. Analysis of data indicated significant personality differences between untrained and trained subjects in the following areas: anxiety, depression, hostility, intelligence, emotional stability, conscientiousness, self-assurance, and state of relaxation. These trait differences were not claimed as attributable to physical training; age appeared to be a more important factor. No changes in any of the trait characteristics were discovered after the ten-week training period. (MJB)

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PERSONALITY CHARACTERISTICS OF TRAINED VS NON-TRAINED INDIVIDUALS

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INTRODUCTION

This study was undertaken with two primary goals in mind. The first goal was to determine whether trained (T) and non-trained (NT) subjects differ in their personality characteristics (TRANSVERSE STUDY). The second goal was to determine whether an exercise program could produce changes in personality within the same individual (LONGITUDINAL STUDY). Included in these studies were several subgroups of subjects from the Lincoln YMCA and the University of Nebraska. The data reported in this paper represents the results of grouping all trained and non-trained subgroups together.

TRANSVERSE STUDY

The purpose of this study was to determine whether persons who engage in regular physical activity, and have reached a trained state, differ from non-trained subjects in their personality traits. Subjects in this group were first classed as trained (N=65) or non-trained (N=56) based on their prior history of physical activity. The trained group had been involved in regular physical activity for a minimum of three months at a frequency of three times per week. The aerobic fitness of all subjects was determined using Astrand's Physical Working Capacity (PWC) test and bicycle ergometry (Astrand,1960). The PWC_{150} values were from actual measurements, the PWC_{170} was extrapolated from the PWC_{150} and the oxygen consumption was estimated from Astrand's nomograms. The results indicate that the trained subjects had significantly lower resting heart rates and higher PWC_{150} values-----indicative of higher levels of fitness as compared to the non-trained subjects.

Before taking the PWC test subjects were given two psychological tests: Cattell's 16 Personality Factor (16 PF) Questionnaire and the Multiple Affect Adjective Checklist (MAACL). The 16 PF provides an assessment of 16 primary source traits in an individual's personality (Cattell, 1970) and the MAACL provides measures of three negative affects in an individual's personality---anxiety, depression and hostility (Zuckerman, 1960). These can be measured either as "trait" ("General" form) or "state" ("today" form) characteristics.

The 16 PF indicated that the T and NT individuals differed significantly on five primary source traits---factors B,C,G,O and Q_4. Thus, the trained subjects were judged to be brighter (factor B), emotionally more stable (factor C), more conscientious (factor G), more self-assured (factor O) and more relaxed (factor Q_4). Factor B is a measure of low intelligence vs high intelligence but Cattell (1970) points out that factor B may also reflect other ratings such as less organized vs well organized, poorer judgement vs better judgement or concrete vs abstract thinking. The latter ratings are more likely to be measured in this study. Cattell also notes that factors C and O are often found closely associated with factor Q_4. This was found to be true in this study.

[1]Paper presented at the Annual Meeting of the American College of Sports Medicine .Chicago, Ill. May 26, 1977

[2]This paper presents some of the results of a study by Ron Schlegelmilch in fulfillment of requirements for the M.S. degree.

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Factor Q_4 is an important trait because people who exercise on a regular basis often report a sense of well-being and relaxation following exercise. Here we see evidence that this relaxed feeling may be part of the person's general personality profile. However, when we examine the subgroups of the transverse study we see that one group (NU-T) was not relaxed but were relatively more tense than the NT subjects. This may reflect the age of the individuals and their position in life. The YMCA-T and NOR-T groups were older men, established in their occupations, whereas the NU-T were college students subjected to considerable academic pressures and uncertainties concerning their future vocations and goals in life. Thus, this relaxed trait detected by the 16 PF is probably not a result of regular exercise but rather the result of greater maturity and established position in life. (The NU-T were slightly more relaxed than the NU-NT but this was not significant)

The MAACL indicated no difference on the "general" (trait) form but the "today" (state) form indicated that the trained subjects had significantly less anxiety and depression than did the non-trained individuals. A closer examination of the subgroups reveals that the NU-T group had anxiety levels almost as high as the NT subjects and that the reduced anxiety was strongest in the older men. This is similar to what was found for factor Q_4 of the 16 PF and again supports the idea that the reduced anxiety may not be due to an exercise program but to the individual's level of maturity and station in life. Cattell (1970) has pointed out that factor Q_4 is directly related to anxiety----this is borne out by the similar graphs obtained for the anxiety scale of the MAACL and factor Q_4 of the 16 PF.

LONGITUDINAL STUDY

In order to examine more closely the effects of exercise on personality factors a longitudinal study was conducted using University of Nebraska students ----13 from Fencing classes and 13 from Body Conditioning and Weight Lifting classes. The 26 selected had not been engaged in any regular exercise program prior to enrolling in these courses. They were given the PWC test and the Psychological tests before and after a 10 week training period. The training program consisted of the regular class activities which met three times weekly. Each class period concluded with a one mile run in order to provide an aerobic fitness component in their training program.

The training program was apparently successful as seen in the lower resting heart rates and larger PWC_{150} values at the end of the 10 week training period. Most of this improvement in fitness was produced by the fencing classes even though the wrestling classes appeared to be more diligent in adherence to the one mile run program. Perhaps the fencers were obtaining sufficient aerobic exercise during their regular class periods while the weight lifters were engaged primarily in anaerobic type exercises.

The training program failed to produce any significant changes in the personality factors measured by the 16 PF questionnaire.

The "today" form of the MAACL indicated there was a significant reduction in anxiety and depression after the 10 weeks of training. An interesting aspect of this was that the weight lifters accounted for most of the decreased anxiety and depression even though they showed only minor improvement in their aerobic fitness as measured by the PWC test. Thus, it is difficult to link the reduced anxiety and depression to the improved physical fitness of the subjects. Many other social and psychological forces occurring during the 10 weeks could have produced these changes in the subjects.

CONCLUSIONS

1. Transverse Study

Significant personality differences were found between trained and non-trained subjects, but we cannot claim that exercise has produced these differences. Age would appear to be a more important factor since the younger trained subjects (NU-T) were significantly more tense (16 PF) and had higher anxiety levels (MAACL) than did the older trained subjects. Cattell (1970) notes that several factors in the 16 PF are definitely age related. Three of the factors which differentiated the trained and non-trained in this study (G, O, Q_4) change with age so that a person becomes more conscientious, self-assured and relaxed as he gets older. Since more older subjects were included in the trained group than in the non-trained group, this would skew the results to indicate significant changes in factors which are age related. The lower level of depression in the trained group is harder to explain based on age and may reflect an honest effect of long term physical exercise.

A major weakness of transverse or cross-sectional type studies is that one can never be sure that the personality traits were not present initially in the individual before he began a sustained exercise program. To isolate the pure influence of exercise training we must employ longitudinal studies where each individual serves as his own control (Hammett, 1967; Morgan, 1976).

2. Longitudinal Study

No changes in any of the 16 PF traits were found after 10 weeks of training. This is in agreement with most of the literature and perhaps should be expected since these are "trait" type personality factors which normally require months or years to alter (Hammett, 1967; Morgan, 1970).

It is more plausible to expect that a training program might produce changes in "state" anxiety or depression as was found in this study. "State" personality factors are those which vary with the day-to-day situation or stress that the person is experiencing (Franks and Jette, 1969). The reduced anxiety and depression fit in well with the subjective feeling of "well-being" and relaxation reported in numerous exercise studies (Morgan, 1968; Morgan, 1976). This is also supported by the finding that acute exercise reduces the resting muscle action potentials (MAP) in normal individuals (de Vries and Adams, 1972) since the MAP is considered to be a good objective measurement of anxiety tension states. A disturbing finding in this study however, was that the reduced anxiety and depression was found primarily in the weight lifting class, but they did not show significant improvement in their aerobic fitness. Thus, the psychological changes could not be due to improved fitness level due to the exercise program, but more likely are caused by socialization factors involved in a formal group activity (Massie and Shephard, 1971; Morgan and Pollock, 1976).

REFERENCES

1. Astrand, I. Aerobic work capacity in men and women with special reference to age. Acta. Physiol. Scand. 49 (Suppl. 169):1-92, 1960.

2. Cattell, R.; H. Eber and M. Tatsuoka. Handbook for the sixteen personality factor questionnaire (16 PF). Institute for Personality and Ability testing. Champaign, Ill. 1970.

3. de Vries, H. and G. Adams. Electromyographic comparison of single doses of exercise and meprobamate as to effects on muscular relaxation. Amer. J. Physical Med. 51: 130-141, 1972.

4. Franks, B. and M. Jette. Manifest anxiety and physical fitness. Paper presented to the National College Physical Education Association for Men. Annual meeting, Chicago, Ill. Dec. 1969.

5. Hammett, V. Psychological changes with physical fitness training. Canad. Med. Ass. J. 96: 764-769, 1967.

6. Ismail, A. and R. Young. The effect of chronic exercise on the personality of middle-aged men by univariate and multivariate approaches. J. Human Ergol. 2: 47-57, 1973.

7. Massie, J. and R. Shephard. Physiological and psychological effects of training. Med. Sci. Sports 3: 110-117, 1971.

8. Morgan, W. Psychological Considerations. JHPER 39: 26-28, 1968.

9. Morgan, W.; J. Roberts, F. Brand and A. Feinerman. Psychological effect of chronic physical activity. Med. Sci. Sports 2: 213-217, 1970.

10. Morgan, W. Psychological consequences of vigorous physical activity and Sport. Paper presented at the annual meeting of the American Academy of Physical Education, Milwaukee, Wisconsin, 1976.

11. Morgan, W. and M. Pollock. Physical activity and cardiovascular health: psychological aspects. Paper presented at the International Congress of Physical Activity Sciences, Quebec City, July 1976.

12. Zuckerman, M. The development of an affect adjective checklist for the measurement of anxiety. J. Consult. Psychol. 24: 457-462, 1960.